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MEMORANDUM FOR: [redacted] Ass't, NIO Economics STAT

SUBJECT: Briefing Information on Soviet Energy Projects

1. Ice-Resistant Offshore Platform Construction Yards

The Soviet Gas Ministry oversees all offshore exploration and development for both oil and gas. Planned operations in offshore waters of the Barent's, Kara and Okhotsk Seas will require coastal construction yards and/or graving basins to fabricate and launch offshore structures which will support year round drilling and production activity. These structures or platforms must be able to withstand the strain and stress of the shifting pack ice commonly associated with arctic waters. Moreover, these structures need to be able to withstand the considerable force of the pack ice combined with whatever tidal forces occur in the area of operation. In the event concrete structures are selected, the use of coastal graving basins in deep water fjords is almost mandatory. The cost of such a facility can run from $10-40 million per yard. Aquisition of fabrication yards and related equipment can be obtained through the United Kingdom, Norway, France, The Netherlands, Japan, Italy, Canada and West Germany in addition to the US.

2. Ice Resistant Offshore Platforms for Sakhalin

Current negotiations with the West on the Sakhalin

development project are stymied by the lack of a Japanese buyer for 3 million tons of liquefied natural gas (LNG) per year, attractive financing and high investment costs of $3.5 billion. Construction cost for three or more ice-resistant production platforms for waters ranging from 30 to 90 meters deep should average out at $100 million per platform. Each platform would be completed with a pipeline plus all ancillary producing facilities. The selection of reinforced concrete, or tubular steel design materials could affect the final platform lost at least marginally, depending on local availability of materials used and labor costs. Norwegian, and French suppliers are most apt to promote the use of reinforced concrete. British, Japanese, Dutch, Italian, West German and US builders prefer tubular steel structures. The concrete platforms tend to be heavier and sink into the seabed over time, which can cause problems with pipe connections and insurance.

3. Underwater Wellhead Equipment for Oil and Gas Wells

Recent visitors from the USSR report that Moscow will emphasize offshore Caspian oil and gas development in the 1986-1990 plan. Sea floor well completions using underwater wellheads, trees, flowlines and manifold systems will save time and speed development of offshore fields. Also, they obviate the need for costly platforms and production modules at the surface as well as, offshore pipelines in some cases. Seafloor manifolds can be designed to accommodate oil or gas production from a

cluster of up to a dozen or more wells if necessary. Recent inquiries for the "28th of April" field near Baku called for five-4500 meter deep wells. Service life for the systems located below 200 meters of water are specified as follows: 15 years for the seafloor Christmas Tree, 10 years for the remote control unit 15 years for the wellhead equipment and 10 years for all above water equipment for offloading. These systems have also been requested for Sakhalin where up to 46 clusters of 5 or 6 wells each would be installed in 30 meter water depths. Cost of this equipment package was estimated at $80 million in early 1984, or about $350,000 per well. Comparable systems are available in Italy, France, West Germany, The United Kingdon, Canada, Japan, Norway, the US and possibly Brazil. Last March the Soviets were also seeking bids on a plant to produce these items in the USSR.

4. The Karachaganak Development Project

This $500 million dollar project is already underway. A West Germany firm Salzgitter (LGA-Gaztechnik) won a $45 million first stage gas plant contract in 1982 for the design and supply of a complete gas and condensate treatment facility capable of handling 3 billion m^3/yr of sour gas. In addition to the plant Gaztechnik supplied related equipment for a 150 kilometer pipeline to Orenburg and the "Soyuz pipeline" headstation as well as a transfer system for underground storage of natural gas liquids. Further expansion of gas processing plant capacity to 20 billion ^{3}/yr is planned. The second stage plant will have at

least 3 compressor stations and 6 equipment trains per station. More recent inquiries show Soviet interest in obtaining a turnkey contract from a Western engineering firm to build a $300 million plant rated at 20 billion m^3/yr, plus gas recycling and reinjection facilities. In addition to 20 billion m^3/yr of purified methane gas, the plant would also produce 8 million tons of condensate (natural gas liquids--propane, butane, ethane, hexane, pentane) plus nitrogen, sulfur and carbon dioxide in unknown amounts. Other contracts for development drilling rigs, 130 corrosion resistant wellhead equipment packages including casing and tubing, gathering lines, blow-out prevention equipment, a sulfur plant, hydrogen sulfide detection systems and "workover" rigs for well repair could cost another $200 million. Several Western consortiums and subcontractors led by Salzgitter, Mannesmann Technip, Lurgi etc. are competing for this project, representing West Germany, France, Canada, Italy, Japan, The United Kingdom and the offshore affiliates of US Firms.

5. The Astrakhan Development Project

Development of the Deep Astrakhan Gas fields was launched in early 1983 following the award of a $394 million gas seperation plant contract to the French engineering firm Technip. This plant represents Stage I of development and should produce 6 billion m^3/yr of gas, 1.8 million tons of condensate and 3 million tons of sulfur from 60 wells after 1986. Carbon dioxide may also be recovered for use in nearby enhanced oil recovery

projects. With Stages II and III, field output will reach 18 billion m^3/yr sometime in the 1990's. Contractors are now bidding on a plant for Stage II and with Stage III plant costs could run up to $1.2 billion. About 180 wells will be drilled overall and as many sets of corrosion resistant wellhead producing equipment will be needed valued at some $200 million. Also manifold systems, gathering lines and pipelines plus ancillary controls should be worth another $350-400 million. Total project cost is apt to fall in the $1.5-2.0 billion range, given the current soft steel markets and severe competition. Sulfur removal and processing plants and corrosion resistant equipment and technology are available from several Western suppliers, in Japan, Canada, West Germany, France, Italy, Sweden and the US.